GREENER
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An FHWA Quarterly Newsletter for Roadsides Decision-Makers

This issue is devoted to A National Conference Proceedings

SEEDS FOR THE FUTURE

EDITOR'S NOTE: This issue of Greener Roadsides serves as the conference proceedings for the 2001 conference, Seeds For the Future. On April 18-20, some 150 attendees converged in Orlando. They included: Departments of Transportation, Federal, State, and local agencies, researchers, native seed producers, farmers looking for alternative crops, and related vendors. The conference was based on the fact that the demand for regionally adapted native wildflower and grass seed exceeds the supply due to changes in law, land management strategies, and a conservation ethic. The gap between supply and demand delays projects, frustrates contractors, increases erosion control costs, delays habitat restoration, complicates wildfire revegetation, and generally slows many conservation efforts nationally. Pressure has increased due to improving technical information, changing local, state and federal policies, reflecting public interest, and expanding support of ecological approaches in land management. The conference intent was to stimulate an emerging industry, native seed production, by sharing current market needs, and know-how. What follows are excerpts and summaries of the conference presentations.

SEED DORMANCY AND GERMINATION IN RELATION TO STAND ESTABLISHMENT OF NATIVE WILDFLOWERS AND GRASSES

Carol C. Baskin, (859) 257-3996
ccbask0@pop.uky.edu
University of Kentucky,
Lexington, KY 40506

Freshly-matured seeds of some species germinate over a range of environmental conditions and thus are nondormant, while those of other species fail to germinate at any set of environmental conditions and thus are dormant. The classes of seed dormancy are physiological (PD), morphological (MD), morphophysiological (MPD), physical (PY), and combinational (PY+PD). A dichotomous key has been written to allow one to quickly and easily distinguish these five classes of seed dormancy [Baskin, C. C. and J. M. Baskin. How to get the most information on dormancy-breaking and germination requirements from the fewest seeds. IN: E. Guerrant, K. Havens, and M. Maunder (editors). *Strategies for Survival*. Island Press, Covelo, CA (in press)]. PD is caused by a physiological inhibiting mechanism in the embryo, and it is the most common class of seed dormancy on earth. PD may be broken during exposure to cool (0.05-10°C) moist conditions such as occur in winter (called cold stratification) or warm (≥15°C) conditions such as occur in summer, depending on the species. In some species, dormancy-break during summer may occur under warm, dry conditions (after ripening), but in other species warm, moist conditions (called warm stratification) are required. Information on the phenological (ecological) life cycle of a species and seasonal temperature changes in the habitat will help one decide if seeds should be given warm and/or cold treatments to break dormancy. PY is due to an impermeable seed or fruit coat, it is the second most common class of seed dormancy on earth. PY occurs in some members of 15 plant families, including the Anacardiaceae, Bixaceae, Cannaceae, Cistaceae, Cochlospermaceae, Convolvulaceae, Curcurbitaceae, Dipterocarpaceae, Fabaceae, Geraniaceae, Malvaceae (now includes the Bombacaceae, Sterculiaceae, and Tiliaceae), Nelumbonaceae, Rhamnaceae, Sapindaceae, and Sarcolaenaceae. Impermeable seeds (or fruits) in each of these families have a distinct "water plug" that must be dislodged or moved before imbibition can occur. In nature, seeds with PY may germinate after exposure to low winter temperatures (*Melilotus* spp.), drying (*Geranium carolinianum*), high daily temperature fluctuations (winter annual *Trifolium* spp.), or fire (*Iliamna corei*). ■

In short supply, a pound of native seed is valued at $10 to $900 per pound.

WILDLAND CERTIFICATION FACT SHEET

California Crop Improvement Association
Parsons Seed Certification Center, One Shields Avenue, University of California
Davis, California 95616-8541
(530) 752-0544 / 752-4735 FAX
Contact: Betsy Peterson
ekpeterson@ucdavis.edu

WILDLAND CERTIFICATION FACT SHEET
A SOURCE IDENTIFICATION PROGRAM FOR NATIVE SPECIES COLLECTIONS

Why?

Large scale disturbances of ecosystems whether a result of man's actions or natural events, frequently require efforts to restore, revegetate, improve or stabilize natural plant communities. The ability to provide material for revegetation that can be identified not only by genus and species, but also by ecotype is critical for successful restoration demands.

Purpose:

To assure proper identity and purity of native grasses and forbs, reproductive material is maintained through all stages of production. Additionally, certification assures that the reproductive material is correctly labeled so that appropriate planting material can be selected for specific planting sites. The term reproductive material refers to all forms of reproductive material including seed, seedlings, cuttings, rooted cuttings and transplants.

Participation:

Participation in the program is open to any interested party who agrees to follow the guidelines and standards as defined for both Collectors and Producers of native and naturalized species.

After control of invasives plants or weeds, native restoration begins in Oregon.

Procedure:

Through a series of inspections and lab tests, the collection, handling, multiplication and cleaning is monitored by California Crop Improvement Association (CCIA). Provided all standards are met a Certification Tag is affixed to Source Identified seedlots.

Forms:

Species Site Identification
A Species Site Identification Form identifies the genus and species and the exact location of the original collection. MLRA, GPS and Township Range and Section are used to pinpoint collection sites. A species site I.D. number is assigned by the collector which will be used to identify and track a seedlot throughout its marketing life.

Application

A Wildland Collected Application is designed to notify the California Crop Improvement Association that a collection or harvest will be made. Application is made prior to the anticipated harvest or collection date. This application provides field location, planting date, generation of production for a specific collection as identified on the Species Site Identification Form. This application provides notification to CCIA that a pre-harvest inspection is needed.

Harvest

A Collection Site Identification Log is used as notification that a harvest or collection has been made. It provides CCIA with date of harvest, the amount of material harvested and by whom. CCIA uses this information to keep a record of inventory volumes required for periodic audits.

Seed Sample

A Wildland Collected Sample Form accompanies a seed sample to the CCIA laboratory for purity analysis where it is analyzed for noxious weed seed and purity is stated. The sample is identified by the certification number assigned at the time of field inspection.

Tags:

Information printed on the tag is class produced, genus, species common name, lot number, MLRA number, certification number, year of production and generation.

Wildland Collected Seed that passes all the standards within the certification program is tagged with a yellow tag. CCIA certified seed assures the buyer of ecotype-specific, high quality, seed of California native species. ■

Charles Dale, Minnesota Department of Agriculture, Seed and Noxious Weed Unit, 90 West Plato Boulevard, St. Paul, Minnesota 55107-2094, Telephone: (651) 296-6123 FAX: (651)297-2271, Charles.Dale@state.mn.us

LABELING SEED FOR SALE IN MINNESOTA

Every person who offers for sale seed for sowing purposes in Minnesota must attach to each container or bulk bin a seed label showing all information required by the Minnesota Seed Law in Minnesota Statutes, section 21.82.

SEED SALES RECORD REQUIREMENTS

The following records are required for each lot:

A. The initial labeler must keep a representative file sample for each seed lot for one year;
B. The seed grower must have a "Genuine Grower's Declaration" or similar documentation;
C. Sales must be recorded on invoices that include the lot number, name of the kind and variety, amount of seed being sold, date of sale, and the name and address of buyer and seller;
D. A copy of the seed label and the certification documents when applicable; and
E. The test information from which the labeling information was derived.

WEED SEED LIMITATIONS

Prohibited noxious weed seeds are not allowed in any seed offered for sale in the state.

Restricted noxious weed seeds are allowed in seed offered for sale in the state but only up to the maximum rate of twenty-five (25) per pound. If present in lesser amounts, the name and number per pound for each must be listed on the label under the heading "Noxious Weed Seeds."

LABEL REQUIREMENTS: FLOWER SEEDS

1. The kind and variety or a statement of type and performance characteristics for flower seeds;
2. The lot number or other lot identification;
3. The pure seed percentage if less than 90%;
4. The inert matter percentage if greater than 10%;
5. The other crop seed, weed seed, and noxious weed seed if present;
6. If the seed is a "Blend" or a "Mixture," it must be identified as such;
7. The year the seed was packed for sale if the germination percentage meets or exceeds the standard established by rule;
8. If the germination is below the standard, the actual germination percentage and the date of test must be listed;
9. Net weight of contents;
10. If the number of seeds present in the container is less than 200 seeds, the actual number present may be listed in lieu of the net weight;
11. The name and address of the labeler.

NATIVE SEED CERTIFICATION IN MINNESOTA

- Minnesota Statutes 21.901 provides authority to the commissioner of agriculture for the designation of official state seed certifying agency.
- The Minnesota Crop Improvement Association (MCIA) was designated as the official certifying agency in the early 1900's and continues in that role today.

CERTIFICATION OF PRE-VARIETY GERMPLASM

- MCIA established standards for pre-variety germplasm in the 1990's.
- Eligible species include indigenous or non-indigenous trees, shrubs (including vines), or herbaceous plants (forbs and grasses).
- The standards apply to seed, seedlings, or other propagating materials of species, selections, clones, intraspecific hybrids, etc. (collectively referred to as germplasm types) which have not been released as a variety.

GERMPLASM TYPES ARE RECOGNIZED AS FOLLOWS:

1. Tested Class - progeny of plants with parentage proven to be genetically superior or possessing distinctive traits for which heritability is stable but for which no variety has been named or released.
2. Selected Class - progeny of phenotypically selected plants of untested parentage that have promise but not proven to be genetically superior or have distinctive traits.
3. Source Identified Class – seed, seedlings, or other propagating material collected from natural stands, seed production areas, seed fields, or orchards where no selection or testing of the parent population has been made.

- No limitation on the number of generations is defined for Source Identified germplasm.
- Limitation of generations For Tested or Selected germplasm may be specified for each species.
- Production is monitored to make sure isolation and other practices are followed to prevent contamination of the germplasm or cause genetic drift.
- Limitation of generations is applicable to both sexual (seed) and asexual (cuttings, rhizomes, grafting, etc.) reproduction .

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REGIONAL GROWERS SHARE EXPERIENCES

NORTHEAST

Calvin Ernst, Ernst Conservation Seeds
(800) 873-3321, calvin@ernstseed.com

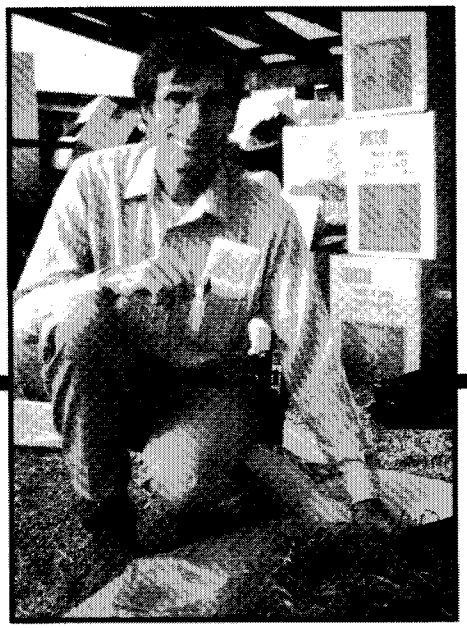
Ernst Conservation Seeds is a private partnership consisting of Calvin and Marcia Ernst with their children, Andy, Michael and Robin, dedicated to the production of seed and soil bioengineering materials for environmental restoration. ECS has some 50 employees and 1800 acres of production in Northwest Pennsylvania.

I feel that native seed production in the eastern United states is generally less developed than the rest of the nation. However, for generations, the collection and marketing by several nurseries of native tree and shrub seed has been a high quality industry, selling local ecotypes with site –specific information.

Historically, native species were disturbed by early European settlers. The early removal of forest lands and overgrazing destroyed much of the natural open areas used by Native Americans. Many of the original native plants were replaced by traditional plants from other Countries.

Enter the Plant Materials Center with their recognition of native plants having production and environmental value. At Ernst, we first saw the advantage of native plants for mine reclamation when we started growing Tioga Deertongue released by Big Flats Plant Material Center. This was followed by Shelter Switchgrass and Niagara Big Bluestem for reclamation and wildlife habitat work. Our business changed drastically when we realized that nonnative Crownvetch was being considered invasive in many situations. Can you imagine being called by the National Park Service, in charge of the Washington Monument, and being asked how to get rid of Crownvetch, the plant you have spent a lifetime producing?

Calvin Ernst during start-up of his native seed business in the Northeast.



We now grow natives for wetland restoration, roadside stabilization and beauty, along with wildlife food and cover. It is easy to promote a milkweed when you explain that it is necessary for the survival of Monarch butterflies.

Some species we grow for specific conservation efforts, while other species meet a wide range of applications. We now grow over 200 species native to the eastern United States and Canada. Our sales grow faster than our production. There is a great demand for high quality seed of known origin. ■

MIDWEST

Ron Bowen, Prairie Restorations, Inc.
(763) 631-9425, Prairie@sherbtel.net

Ron Bowen, Founder and President of Prairie Restorations, Inc. (PRI), has been developing his company since 1971. The business is driven by a simple mission: To provide high quality, diverse and ecologically appropriate native plant materials and restoration services for reconstructed and remnant landscapes. The work is broad based and has required a serious commitment of time and energy.

At the current time, PRI operates out of four locations, all in Minnesota. The vast majority of customers and project sites are located within 300 miles of Minneapolis. Basically there are two work groups within the company. The products group includes plant and seed production, and the services group includes installation and management services. Most of the plants are produced as seedlings in cell-paks (500,000 annually) while the seed comes from managed farm fields (250 acres). Sales are generally split about 50/50 between the public and private sector and the work is carried out by a permanent staff of 25.

The native plant/seed/services business has been challenging for many reasons. Doing the job right requires a substantial capital outlay. Costs for setting up a seed and plant production center can easily exceed $1,000,000. Staffing it and keeping everything going can cost at least another $1,000,000 annually. Finding and developing a customer base is always a challenge. Education is the name of the game because once people know of the native option, they normally find it to be appealing.

Getting this work done requires innovation and persistence. PRI uses modified combines for harvesting seed and fairly standard air-screen separators for cleaning it. Approximately 75% of the forb seed is still collected by hand, one seed head at a time. The greenhouse

MIDWEST CONT.

seedlings are all hand transplanted, one plant at a time. Restoration activities include spraying, burning, soil tillage, seeding, mulching, etc. The business currently owns 14 John Deere tractors, 8 vintage Gleaner combines, 30 or more trucks and a high assortment of other miscellaneous equipment.

30 years ago this work needed and today still needs to be done. This is a hard but gratifying work that should be driven by a commitment to native plant communities, but will benefit by skills in such areas as communications and personnel management, plant and seed knowledge, mechanical skills and plant community management skills. Such is the nature of small business – you simply need to wear many hats. ■

SOUTH

Bill Nieman, Native American Seed
(800) 728-4043, www.seedsource.com

When the seed of the bluebonnet is ripe, a man has a 3 to 5 day window to gather before the pods twist open, throwing the seeds to the earth.....

Timing is everything! The conference opened at the same time bluebonnet seed ripened and Bill had to make a choice between sharing his experience with the conference or making a living. His choice resulted in a faxed presentation, read in part to the audience because it underscored the realities of the business along with his commitment to the business. Here are some excerpts.

There is nothing new under the sun when it comes to natives. We have all the information we need. Seems like we have been talking about the loss of native habitat for more than a hundred years. Way back in 1880, at the Abilene grass station, a rangeland scientist pleaded that a great loss of prairie species was at the hand of man and his cheap food policy. The lack of land stewardship continues today. Not because of missing technology or information; but because of the lack of will power. The will to perform individual acts of restraint. ..... The will to be a leaver instead of a taker...the will to go forth and actually do something to lend a helping hand. How will you touch the earth today?

BRI owner, Patrick Burke, explains seedling production to Phil Johnson, Montana DOT, in 1995.

I will, with the grace of God, likely produce several tons of bluebonnets, but what about the 249 other species of the blackland prairie? Who can even name them? Then if I came to you with them all in a mixture, would you buy and at what price? In the seed world, who could even test them?

Then there is the "globally imperiled" coastal prairie, even harder to find. Texas has nine other ecoregions in need of protection and restoration. Perhaps the next conference could focus on: "producing behaviorly qualified citizens to receive, nurture and care for native habitats." ■

WEST

Tim W. Meikle, Director of Research & Development

Bitterroot Restoration, Inc.
(406) 961-4991

Bitterroot Restoration, Inc. (BRI) was founded in 1986 to provide comprehensive restoration services to managers of disturbed lands. We constructed our first greenhouse to propagate site-adapted native plants from seed collected in eastern Montana at Peabody Western's Big Sky and Western Energy's Rosebud Mines. Since this time, we have expanded from our home office in Corvallis, Montana to an additional production facility near Sacramento, California and consulting office in San Diego, California.

Our current production capability is approximately 2 million seedlings annually. We have successfully propagated over 300 species of grasses, grass-like plants, forbs, shrubs, and trees. We continue to refine our growing and implementation techniques through an active research and development program and have developed Cooperative Research and Development Agreements with the Corps of Engineers and US Department of Agriculture.

BRI provides a full range of services, including restoration planning, native plant propagation and implementation to mining companies, the National Park

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Iowa Ecotype Project

Kirk Henderson, , (319) 273-2813
Kirk.Henderson@uni.edu
Native Roadside
Vegetation Center
University of Northern Iowa

In memory of John Reid, UDSA, NRCS Plant Materials Specialist, Elsberry Missouri. He was our trusted guide through the early and most critical stages of this project. Everyone he called seeking help with the new project they said, "take good notes John, eventually we'll be coming to you." Thanks, John.

An ideal seed mix for Iowa Roadsides growing in a remnant prairie.

The Iowa Department of Transportation administers something called the Living Roadway Trust Fund (LRTF). It's not a lot of money, about $600,000 a year. But it has been hugely important to the success of Iowa's Integrated Roadside Vegetation Manage-ment (IRVM) program. It pays for vegetation inventories, specialized seeding equipment and native grass and wildflower seed. It also pays for education and research. Steve Holland does a great job administering the fund providing money for State, city and county roadside projects. If your State does not have an LRTF, you should get one.

The LRTF has funded an exciting initiative called the Iowa Ecotype Project (IEP). The IEP is the brainchild of Dr. Daryl Smith, professor of biology and longtime prairie educator and roadside advocate at the University of Northern Iowa. As has often been the case in his life, Dr. Smith came up with a good idea at a very good time.

The design of the Iowa Ecotype Project: The project began in 1990 when Dr. Smith submitted a grant application to the DOT's Living Roadway Trust Fund. He asked for $25,000 for the first year of a project that would eventually result in Iowa seed of 25-30 species being available from commercial growers in large quantities at affordable prices. He chose to work with commercial growers rather than create one more state-run project that unfairly competes with private enterprise. The 25 or 30 native species would be ones commonly used in roadside and other conservation plantings. These include five or six perennial grasses, some early to mid-successional forbs and a few of the more charismatic conservation species.

Each year seed of three species would be collected from native prairie remnants. Seed from several plants within a population would be taken with no consideration given to appearance or growth habit. The goal was to commit as little selection as possible. Lacking funds to pay someone to visit prairie remnants all over the state, the project relied heavily on volunteers for collections.

A key question in the project design involved determining the number of ecotypes or varieties to develop for each species (how many zones to divide the state into). After considering geological regions of the state and differences in growing conditions from east to west, Dr. Smith divided the State into three zones of equal size based mostly on difference in length of growing season ranging north to south. As it turns out demand for the final product is perhaps the overriding factor in choosing zone size. You cannot expect a commercial grower to invest land, equipment, storage, and cleaning facilities in a product with a small market.

The best of partnerships: IDOT, UNI, NRCS Elsberry, Iowa Crop Improvement Association, Iowa State University, NRCS Des Moines, commercial growers, and volunteer network. One of the key roles was played by the natural resources conservation Service (NRCS). Al Ehley was on loan from NRCS to the Roadside Office at UNI from 1988-1992 overseeing county implementation of Iowa's IRVM program. Thanks to Al, we connected with the Plant Materials Centers who have decades of experience developing plants for conservation uses. Ehrling Jacobson, at the Elsberry NRCS Plant Materials Center, introduced us to different categories of certified seed including a recent designation called "Source-identified", seed developed for conservation uses. This seed was certified as to its origin and involved no selection for parent material or specific traits. The end product was to be as much like the original wild seed as possible. This seemed just right for the IEP. The Elsberry facility was able to provide the expertise to clean, plant,

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Seed Production Research Update

Jeffrey G. Norcini
(850) 342-0988, jgn@mail.ifas.ufl.edu
University of Florida/IFAS, North Florida Research & Education Center

Large-scale production of native wildflower seed in the Southeast is extremely limited by the lack of technical information for potential growers in this section of the country and the very limited availability of regionally adapted seed. Two projects that support Florida's emerging native wildflower seed production industry are summarized below.

Establishment of Sustainable Populations of Native Wildflowers on Florida's Roadsides: Ecosystem Management Approaches to the Statewide Application of FDOT's Roadside Wildflower Program (funding provided by the Florida DOT's Environmental Mgmt. Office)

Species. *Argemone mexicana* (Mexican Pricklypoppy)*, *Coreopsis basalis* (Dye Flower), *Coreopsis gladiata* (Coastalplain Tickseed), *Coreopsis lanceolata* (Lanceleaf Coreopsis), *Coreopsis leavenworthii* (Leavenworth's Coreopsis), *Flaveria linearis* (Yellowtop), *Gaillardia pulchella* (Blanketflower), *Lupinus diffusus* (Sky-blue Lupine), *Mimosa strigillosa* (Powderpuff), *Phlox drummondii* (Annual Phlox), *Rudbeckia hirta* (Black-eyed Susan), *Trifolium reflexum* (Buffalo Clover)

*For demos only; see below

Germination. Understanding germination characteristics is crucial to successfully establishing native wildflower stands, whether in a production field or on the roadside. Extensive seed ecology work is being conducted on a few key species, with basic germination characteristics being determined for the other species.

Seed increasing. Florida wildflower seed growers and the USDA Plant Materials Center in Brooksville are increasing seed derived from native Florida populations of the species listed above.

Interstate demo sites. In cooperation with local FDOT and subcontractor roadside vegetation managers, 10 native (Florida ecotype) wildflower plantings have been established across Florida. The sites were established by seeding or by designation of existing populations for preservation and enhancement. Master Gardeners are assisting with some evaluations.

Use of Plateau Herbicide for Weed Management in Native Wildflower Stands

Plateau (imazapic; BASF) is an imidazolinone herbicide to which many native wildflowers are relatively tolerant. Many broadleaf weeds, grasses, and sedges are controlled or suppressed by Plateau. It can be broadcast prior to germination and emergence of wildflowers as well as to established stands. However, tolerance to Plateau can vary considerably with seed source, genotype, variety, stage of growth, and environmental conditions. Plateau is labelled for use on noncrop sites such as roadsides but is not yet labelled for use on any crop.

Plateau 2AS at up to 12 oz product per acre was applied to established stands of Florida ecotypes of blanketflower, dye flower, black-eyed susan, and lanceleaf coreopsis. We concluded that under our environmental conditions and for these ecotypes, 1 to 2 oz product per acre (0.016 to 0.031 lb ai/A) would usually reduce weed competition (depending on the weed species) and cause minimal to no injury. ■

Source Identified Seed Abstract

Richard S. White, (202) 720-1814
richard.s.white@usda.gov
National Program Leader, Plant Materials
Natural Resources Conservation Service
U.S. Department of Agriculture

Several elements enter into successful restoration of disturbed areas, including seedbed preparation, planting techniques, and the plant materials that are used. Using adapted species or ecotypes is probably the most important element to consider, and it is the primary focus of this presentation.

The Natural Resources Conservation Service's Plant Materials (PM) Program develops and transfers effective state-of-the-art plant technology to meet critical resource conservation needs. Some of the problems that are addressed by the program include: bioengineering, coastal dune stabilization, soil erosion, buffer strips, and roadside restoration. The primary products of the program include plant releases and land management technology.

Traditionally the PM program has focused attention on developing cultivars from both native and introduced species. Currently, however, the importance of delivering plants to commercial growers sooner combined with the need for more native materials have brought about significant changes in the program. Plant Materials now focuses its efforts almost entirely on native species and is using pre-varietal releases (tested, selected, and source-identified release types) to get releases to the end user quickly and more efficiently.

Several factors go into making a release and enter into the decision to select species to work on. These include: a) availability of other suitable materials to

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NEW STATE SUPPORT FOR [illegible] CROPS EMERGING

KENTUCKY:

Randy Seymour, (270) 531-2353

Per one of the conference attendees, Randy Seymour, the State of Kentucky set aside over $100 million to be used to fund projects that have potential as alternatives to tobacco production. The Kentucky Agricultural Development Board administers these funds through an application process. Thus far, two applications for field production of native seed have been submitted and funding is expected this winter.

Kentucky also has a new conservation reserve program (CREP) that will spend $120 million setting aside and restoring natives to watershed protection areas. The Kentucky Department of Fish and Wildlife is also actively promoting native plant use. The NRCS is supporting the CREP project and a new forage program that gives equal emphasis to native plant use.

MINNESOTA:

A bill (proposed but not passed) for an act relating to financing native vegetation planting; emphasizing the planting of native species; appropriating money.....

H.F. No. 1620. The goal was to establish a native grasses and wildflower seed production incentive loan program. Although the discussion once included a no-interest loan and repayment with native seed, the bill was a beginning. Here are some of the details:
Section 2. subdivision 1. The commissioner shall establish a seed production loan program to provide loans that enable people to begin or expand efforts to develop and produce new, local-origin, native grass, and native wildflower seed species.

The commissioner shall use the ecological regions identified by the commissioner of natural resources covering the entire State. The commissioner shall design the loan program to produce ten local variety native grass species and 40 local variety native wildflower species for each region. The commissioner shall develop the program to produce 100 acres of native grass seed production and ten acres of native wildflower seed production in each region.

The loan program must provide loans for operating and capital costs related to the development and production of native grass and wildflower seeds during the research and development phase. (Recognizing that the business is not simple to start.)

Loans may not exceed $225 per acre per year of native grass and wildflower seed for each person or entity applying for a loan over an expected average development period of five years (not to exceed eight years, realizing the time it takes). Repayment of the loan is to be made at four percent per annum above the original loan amount.

The applications must be reviewed, ranked, and recommended by a loan review panel appointed by the commissioner (to include two lenders with agricultural experience, and representatives from DOT, DNR and a farm management specialist).

Seeds produced under this section are intended to be used to fulfill state agency needs for seeds and the purchase must be arranged on a contract basis with state agencies in each biennium that program seed is available. (A market is guaranteed!)

NORTH CAROLINA:

State Agricultural Commissioner Meg Scott Phipps is exploring the possibility of farmers growing native plants such as ginseng. At this point the Agricultural Department is looking at plants like ginseng, golden seal and black cohosh, and talking with specialists to see if herb cultivation is a viable agricultural enterprise for small-scale farming. For generations, residents of the Southern Appalachian mountains have collected these and other herbs for natural remedies. "We're looking at elevating production to growing, rather than collecting plants" said Phipps on a recent farm tour in Western North Carolina near Asheville. She intends to "see how we can further diversify agriculture in this part of the state and generate profits for farmers." If native herbs go into production, can native forbs and grass seed be far behind? Robin Suggs of Yellow Creek Botanical Institute who accompanied Phipps noted, "We hope to be able to offer new approaches to people in agriculture. Yellow Creek Botanical Institute is a nonprofit organization trying to develop native plants as a farming option in Western North Carolina. (Excerpted from the January 13, Asheville Citizen-Times by Quintin Ellison, Staff Writer.) ■

NATIONAL NEED FOR SEED

Peggy Olwell, (202) 452-7764
Bureau of Land Management

Use of native grass seed for revegetation following wildland fires has added stress to existing supplies of seed. "In FY 2001, the House of Representatives' Conference Report in Title IV – *Wildland Fire Emergency Appropriations* directed the Departments of Interior and Agriculture agencies to develop a long-term program to manage and supply native plant materials for use in various Federal land management restoration and rehabilitation efforts. The report directed the interagency plant Conservation Alliance (PCA) to lead the effort. In the FY 2002 Appropriations Bill, Congress directed the agencies to continue to implement the Native Plant Material Development Program. The Bureau of Land management has committed $4.6 million to continue that program in FY2002."

SUMMARY OF EXHIBITORS

NATIVE PLANT-RELATED PRODUCTS & INFORMATION EXHIBITED:

NATIVE PLANTS JOURNAL, a practical guide for planting and growing native plants. This magazine is highly illustrated and colorful containing a range of scholarly and non-academic articles. A one-year subscription is available for $30. by calling Kasten Dumroese, 800-847-7377.

HORTICULTURAL ALLIANCE, Sarasota – brochures on bio-coctails used in the landscape industry that could be used with native plantings. Water-management gels are another product they offer in plantings where irrigation is not desirable. Mycorrhizal inoculants are on their product list.

TRUAX COMPANY, INC., Minneapolis - planters engineered for the use of native grasses and forbs, including no-till drills, broadcasters and seed slingers. Jim Truax, (612)537-6639

PRAIRIE HABITATS, developing the technology of seed harvest and restoration, especially hand held and pull type seed strippers for harvest of natives.
John Morgan, (204) 467-9371

AG-RENEWAL, INC. – source of the Woodward flail-vac seed stripper for harvest. In Oklahoma, (800) 658-1446.

IOWA ECOTYPE PROJECT – seeds from Iowa, for Iowa. A practical solution from a State that recognizes the importance of restoring their natural heritage. The project is overseen by the new Native Roadside Vegetation Center of the University of Northern Iowa (UNI). Source-identified certification with licensed ecotypes are indications of their conservation ethic. UNI, 319-273-3005.

IOWA'S LIVING ROADWAY – Highway 20 is an 5000 acre application of the University of Northern Iowa's partnership in restoring native grasses and forbs to Iowa's landscape.
Trees Forever, (800) 369-1269.

INTEGRATED ROADSIDE VEGETATION MANAGEMENT (IRVM) - applied conservation to Iowa's roadsides has resulted in almost 600,000 acres of sustainable, safe, stable, attractive, and low-maintenance roadsides. Another UNI commitment. For more information, call (319) 273-2813.

NATIVE SEED GROWERS:

BAMERT SEED COMPANY – all the way from Muleshoe, Texas. They have produced native grass seed since 1951. They have added selected forbs and legumes to their growing list. A family business. The Bamerts, www.barnertseed.com or (806) 262-9892.

NATIVE AMERICAN SEED – Their 50-page, full-color brochure is packed with details about more than 70 forb and grass species native to Texas. A lot of how-to information is included. Another family business. Bill and Jan Nieman www.seedsource.com or (800) 728-4043.

BUTTES SEED INC. - out of Greeley, Colorado sells mostly native grasses and shrub species to large projects in the West. (800) 782-5947.

ERNST CONSERVATION SEEDS, Meadville, Pennsylvania offering source-identified native seed and related products for a range of uses including wildlife habitat, strip mining, pipeline revegetation, erosion control and conservation uses. The Ernsts, (800) 873-3321.

FLORIDA SPECIFIC:

FLORIDA DEPARTMENT OF TRANSPORTATION – showed off their new Florida Roadside Wildflower brochure which pictures some of its common colorful wildflowers and which explains their wildflower program which began in the 1960's and is now strongly supported by an alliance with the Florida Federation of Garden Clubs. FDOT also distributed a handout explaining how Florida license plates fund wildflower research, educational programs, and someday, a Florida Wildflower Center. Jeff Caster, (850) 922-7205.

FLORIDA DEPARTMENT OF AGRICULTURE – shared a new brochure on Biocontrol, a Bright Future for Florida. This educational brochure describes a number of biocontrol agents being released to control some of Florida's many invasive species problems.

ASSOCIATION OF FLORIDA NATIVE NURSERIES- a not-for-profit corporation whose membership is involved in native plants. It is their policy to preserve native plants in their natural habitats and encourage the planting of native species in landscaping. www.afnn.org

USDA NATURAL RESOURCES CONSERVATION SERVICES – National Plant Materials program at Brooksville, Florida. One of 26 plant material centers in the United States has the mission to provide vegetative solutions to resource conservation problems with the emphasis on using native plant materials. Their solutions attempt to protect water quality, and improve erosion control, forage, and wildlife habitat. Their 1996 technical report, Florida native Plant Collection, Production and Direct Seeding techniques; Interim Report can be accessed through www.fipr.state.fl.us.

The Natives, Inc. – growing native Florida plants for landscaping and restoration is located in the heart of Florida. Established in 1982, their list of native grasses, forbs, trees, shrubs and vine species. They are a design-build firm with a wide-range of projects from residential native plantings, to sandhill restorations. Their wholesale native species list is too long to count.

CONFERENCE SPONSORSHIP: shared by the Florida Department of Transportation, Federal Highway Administration, University of Florida, Florida Wildflower Advisory Council, and the Florida Federation of Garden Clubs.

A THANK YOU

A special thanks for the support that the Florida Department of Transportation Environmental Management Office provided at the recent national Seeds for the Future Workshop held in Orlando.

The primary goal of the conference was to provide technical information to potential seed growers of native wildflower and grass seed throughout the nation. The current market supply cannot meet the demand of federal, State and local agencies who want to revegetate public lands with regional native plants.

I hope the conference will spark the expansion of this industry to supply Florida's needs. I also hope that the Department of Transportation will show support with additional applied research on appropriate roadside species and establishment techniques. With some effort the DOT could also support contract growing initially to help get the seed supply needed for erosion control, landscaping, mitigation, and other planting efforts. By supporting the production of native wildflower and native grass seed, transportation departments can lower maintenance costs, enhance wildlife habitat, improve roadside beauty, gain public support, and protect the natural heritage of their State. Other agencies and organizations that use native seed for reclamation, restoration, and land management programs will also benefit.

Thank you for the support your agency provided for this conference. I especially want to thank Leroy Irwin, Gary Henry and Nancy Hummel for their footwork on all the conference logistics. I heard no complaints, but only praise in the hallways of this event. Attendees were so inspired, they wanted to set a date for another conference! I also want to thank you for your help in our cooperative research effort on Florida ecotypes, public awareness effort at welcome stations, and establishment of the new Florida wildflower license plate. Florida is leading the way in its roadside wildflower program in the Southeast!

Bonnie L. Harper-Lore

WEST CONT.

Service, Federal Highway Administration, and other public and private land managers. Our projects range throughout the western United States and Canada. We have successfully completed prominent Federal Highway Administration projects such as the El-Portal Road reconstruction in Yosemite National Park, California and Losttrail Pass Scenic Byway on the Montana-Idaho border.

Our staff has grown to 40 permanent staff with an additional 65 seasonal employees. Our staff includes experienced professionals from the fields of plant and restoration ecology, forestry, botany, plant physiology, resource conservation, range management, horticulture, recreation management, landscape architecture, soils science, biology and geology. Our broad range of disciplines demonstrates our commitment to restoration as a comprehensive and interdisciplinary practice.

Our team applies their understanding of ecological principles and knowledge of individual site characteristics to guide a client's restoration efforts. This ecological approach leads to the restoration of natural processes and self-sustaining plant communities which, in turn, benefits the local community and reduces maintenance costs for our clients. ■

SOURCE IDENTIFIED SEED ABSTRACT CONT.

do a comparable job; b) relative time to develop a release; c) cost of producing a release; d) relative priority or need that exists; e) major vs. minor plant in the ecosystem; f) area where it can be used – region of adaptation; g) problem(s) that can be solved by the plant; h) time required for release delivery; i) method(s) of propagation; j) seed production; k) potential weediness or invasiveness; l) establishment, management, and care requirements; m) acceptance by land managers.

The different types of releases, i.e., source identified, selected, tested, and cultivar are defined and discussed with respect to which type is most appropriate. Each has advantages and disadvantages. Source identified materials are best suited to specific ecological sites that are comparable to conditions where they originated. Cultivar releases are thoroughly tested and more widely adapted to a broad range of climatic and soil regimes. Their performance is generally more predictable than source identified materials. Selected and tested cultivars are intermediate.

The relative success of source identified materials depends on a staple supply of seed, a reliable means of seed increase (i.e., commercial grower(s)), and end users that want and will plant the source identified material. The absence of any one component will result in failure of a source identified material. Successful operation of this combination is best illustrated by the use of ecotypes, i.e., source-identified materials, by the Iowa Department of Highways. ■

NATIVE SEED SALE IN MINNESOTA CONTINUED

CURRENT STATUS OF NATIVE SEED PRODUCTION AND USE

- Thousands of acres each year converted to native prairie and woodland
- Demand has exceeded production for a number of years and both continue to grow (CRP Impact)
- Over 70 species in Source Identified seed production; 21 growers with membership in the Minnesota Crop Improvement Association in almost half of the states eighty-seven counties
- In 1991 the LCMR (Legislative Commission on Minnesota Resources) funded research on this issue.
- A project to develop cultural, market and species information in order to promote the commercial production of Minnesota origin native grass and wildflower seed was initiated in.
- The results included: 1. Local ecotypes are necessary for most species even though a species may be found from Canada to Texas. 2. Production not meeting market needs. 3. System to verify origin needed to be sure success of plantings

(Copies available only by request)

IMPORTANCE OF SEED REGULATION TO INDUSTRY

Truth in labeling is necessary to

1. determine value of each seed lot
2. insure buyer receives the desired genetic background or pedigree and
3. The focus for competition is on improving quality of product and not on just price ■

IOWA ECOTYPE PROJECT CONT.

and increase our seed and then make it available to growers.

Originally releases were given to growers free of charge. Starting this year, each release costs $500.00. They are also working with the university's intellectual property people to trademark the project seed. Growers will then return a percentage of their sales to the project. Foundation plots have also been planted at the University for land dedicated to the Native Roadside Vegetation Center. In a nutshell the project consists of three steps:

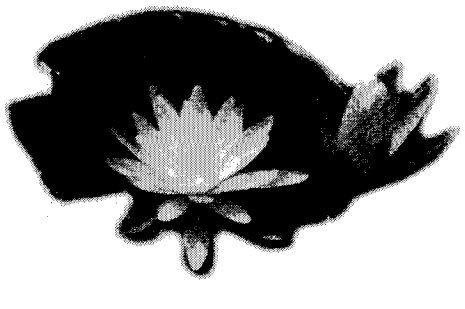
1. collect the seed from Iowa remnants, 2. send it to Elsberry for increase and 3. release it to Iowa growers for production

Upcoming releases are announced in a statewide publication that potential growers are likely to see. Potential growers then contact our office to receive an application for production rights. The application tries to assess potential growers' experience, equipment, land, facilities and intentions. We look for people who have a strong conservation ethic that will see more than a monetary value in the seed. We have had mixed results.

Another key player in the project has been the Iowa crop Improvement Association at Iowa State University. Their office provides collection site verification, production plot inspections, certification, and yellow tags. They make sure growers manage weeds properly and maintain quarter-mile isolation between plots of same species. Chemical herbicides are used. Which ones and methods used are trade secrets of the growers.

For most species, it took longer to produce enough seed for a release than we expected. Hindsight is 20/20. We now know it would have been faster to start most species in a greenhouse and use transplants to establish the increase plots instead of planting seed directly in the ground. The greenhouse and transplant method is labor-intensive, but guarantees a successful stand with quicker seed production. Even small plots can produce a lot of seed.

Growers want guarantees: One of logical catch has been that growers want some guarantee that someone will buy the seed before they invest. In Iowa, the Iowa DOT is our best hope at this time. Their LRTF budgets $5.5 million annually. The DOT wants growers to provide seed for about 1200 acres of annual plantings before they can specify it. So you have a chicken and egg standoff until the Intermodal Surface Transportation Efficiency Act (ISTEA) and now the Transportation Equity Act for the 21st Century (TEA-21) enhancement funds became available to all State DOTs. ISTEA funds are available for bicycle trails, historic preservation, and natural resource/beautification purposes. Projects must have statewide significance and the red tape is so immense they only select large projects. We applied on behalf of 75 counties that were eligible by virtue of having an IRVM plan with the Iowa DOT. This year's $460,000 seed purchase will provide each county with enough seed to plant 10-20 acres of roadsides. Two mixes are available. The forb-rich mix has 50 species. When the request for bids go out, "yellow Tag seed from the Iowa Ecotype Project is favored. This is a source of "guaranteed sales". ■



ATTENTION BORDER STATES:

Weeds Across Borders, a conference on invasive species and transportation will be held in Tucson, May 1-4. States bordering both Canada and Mexico are invited to meet their counterparts and discuss weed issues. The conference is limited to one vegetation manager/ specialist from each State's Departments of Agriculture, Transportation, and Natural Resources. For further information call (651) 291-6104 or visit our webpage: www.fhwa.dot.gov/roadsides.

CALL FOR ENTRIES

2003 Environmental Excellence Awards

This biennial awards program was developed by the FHWA to honor those partners, projects, and processes that excel in meeting growing transportation needs while protecting and enhancing the environment. Anyone can nominate a project that has used Federal funding sources to make a contribution to transporation and the environment. Entries are due by August 15, 2002 to the FHWA Division Administrator in the State where the entry is located. Award plaques will be presented to winners in an Earth Day Ceremony on April 22, 2003 in Washington D.C. For information call Pat Cazenas at (202) 366-4085.

FHWA's Roadside Vegetation Management website may now be found at www.fhwa.dot.gov/roadsides

Greener Roadsides is a quarterly publication of the Federal Highway Administration, Office of Environment and Planning. If you would like to submit letters, comments, or articles, please address them to:

Bonnie Harper-Lore

Editor, Greener Roadsides
Federal Highway Administration
Office of Natural Environment
HEPN-30, Room 3240
400 Seventh Street, S.W.
Washington, D.C. 20590

Phone: (651) 291-6104
Fax: (651) 291-6000
Bonnie.Harper-Lore@fhwa.dot.gov

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